

# **A Retrospective Chart Review of a Nasal Decolonization Program to Decrease Surgical Site Infections at a Community Based Medical Center**

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# Introduction:

Worldwide Hospital acquired Surgical Site Infections (SSI's) are top priority and remain a major focal point to improve care delivery processes and patient outcomes for the surgical patient population.

Focused effort to improve SSI's have been spearheaded by organizations such as:

- The Joint Commission (TJC)
- Centers for Disease Control (CDC)
- American College of Surgeons (ACS)
- Association of Operating Room Nurses (AORN).

Despite the efforts over the years, SSI continues to be a focus area to decrease patient harm.

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### **Substantial morbidity and mortality increase**

- Patients are twice as likely to die
- 60% more likely to be admitted to the intensive care unit (ICU)
- Readmission rate is five times higher than patients who do not have a hospital-acquired SSI.

## Objective:

To evaluate the effectiveness of using a 10% povidone-iodine (PVP-I) Nasal Decolonization Kits in patients undergoing an orthopedic surgery over a 12-month period at the medical center compared to current practices



# Methods:

## **Retrospective study**

- Charts reviewed post intervention

## **Standardized criteria**

- Focused on interventions documented in electronic medical record

## Methods (cont):

### Inclusion criteria

- Nasal decolonization by the administration of a 10% PVP-I nasal swab to both nares prior to surgery

### Data Analysis:

- Computerized reports provided by analyst
- All patient information was blinded when the information was displayed.
- A standard report from the EMR was run to collect all data.



# Results:

The preintervention and postintervention groups were statistically similar.

Table 1:	Ave Age	Sex F/M	Wound Class					ASA				
			1	2	3	4	Ave	1	2	3	4	Ave
Preintervention	70.9	62%/38%	419	2	2	8	1.1	2	237	179	13	2.5
Postintervention	71.3	62%/38%	359	4	0	2	1.0	7	189	159	10	2.5

## Results:

The preintervention group had 8 SSIs compared to 1 for the postintervention group decreasing the number of harm events

Table 2:

Unique Identifier	Procedure(s)	Procedure IDs	Pat Age	Sex	Wound Class	ASA Class	SSI Level	Date	Date of Event	POD#	Pathogen
2018-066	HIP REPLACEMENT REVISION TOTAL	121421	82.56	F	1	3	superficial	08/20/2018	9/3/2018	15	p. mirabilis
2018-106	HIP FRACTURE- NAIL INSERTION	1215431	76.69	F	1	2	deep	09/30/2018	10/28/2018	28	No Culture
2018-127	KNEE REPLACEMENT TOTAL BILATERAL	1214538	64.09	F	1	3	superficial	10/16/2018	11/9/2018	22	MRSA
2018-166	HIP REPLACEMENT REVISION TOTAL	121421	63.74	M	1	2	superficial	11/16/2018	12/12/2018	26	S. Aureus
2018-191	KNEE REPLACEMENT TOTAL	1211672	77.88	M	1	2	superficial	12/03/2018	12/22/2018	19	No Culture
2018-216	KNEE REPLACEMENT TOTAL	1211672	72.15	F	1	3	superficial	12/27/2018	1/25/2019	30	MRSA
2018-266	KNEE REPLACEMENT TOTAL	1211672	73.48	F	1	2	superficial	02/05/2019	2/20/2019	16	No Culture
2018-272	KNEE REPLACEMENT REVISION	1213898	69.19	F	1	3	superficial	02/13/2019	3/9/2019	25	Pseudomonas
2019-169	HIP FRACTURE- NAIL INSERTION	1215431	95.4	F	2	3	superficial	01/04/2020	1/29/2020	26	No Culture



# Results:

A z-score proportions test was conducted and resulted in a p-value of 0.03572, showing statistical significance for SSI reduction

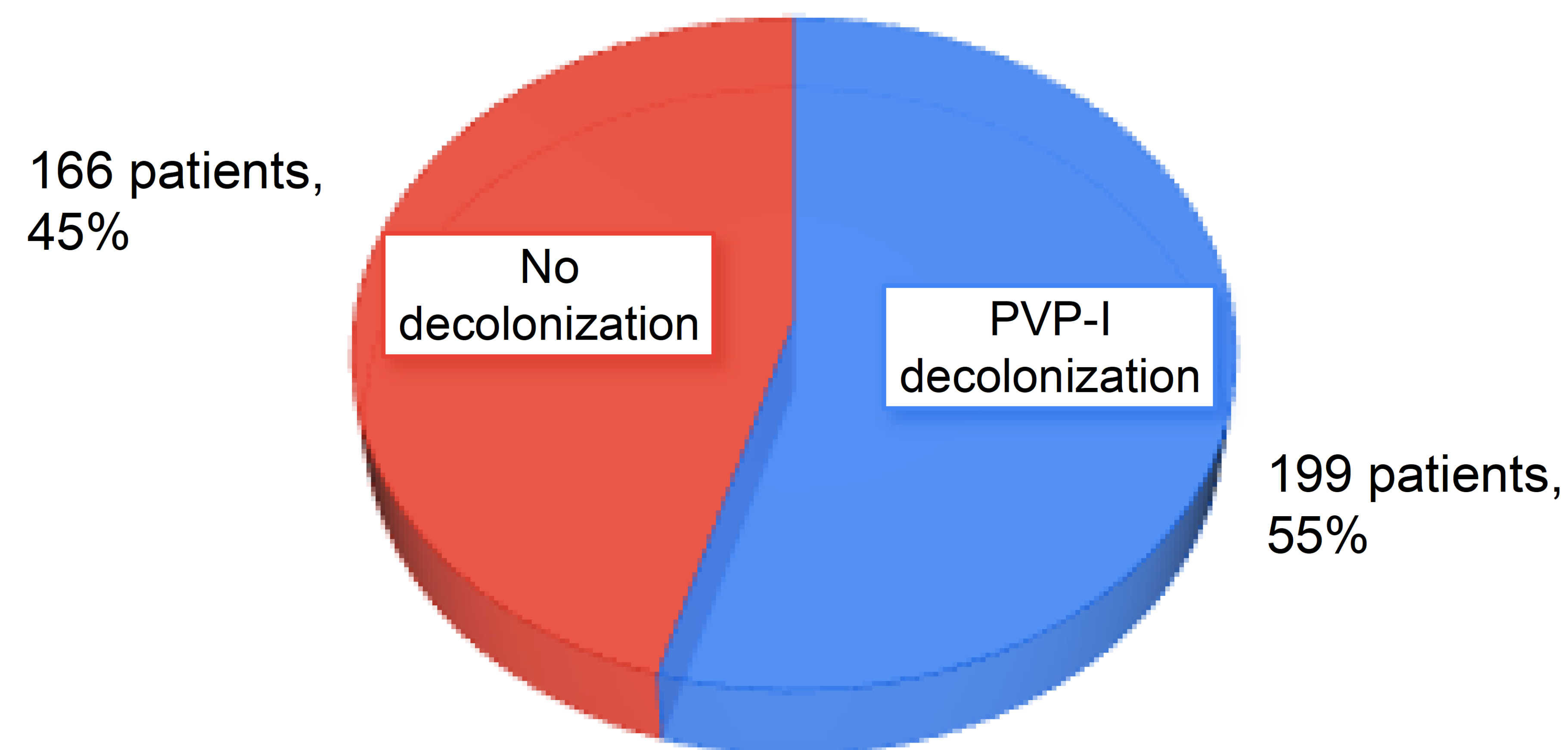
Z-score proportions test	Pre-Intervention	Post- Intervention
Number of Events (Infections Numerator)	8	1
Number of Trials (Denominator)	431	365
Number of non-events (Trials Events)	423	364
Proportion	1.86%	0.27%
z-value	2.1037	
p-value	0.03572	



# Results:

There is an opportunity to increase compliance for nasal decolonization as only 55% of all patients undergoing surgery received the PVP-I

Graph A: **TOTAL PATIENTS DECOLONIZED PRIOR TO SURGERY**



# Conclusion:

The reduction in SSI's potentially translate to a cost savings.

Cost of an infection (low ave) per patient	\$ 23,000.00
Number of patients	7
Total Cost of an SSI	\$ 161,000.00
Cost of the intervention (High Ave) per patient	\$ 18.00
Number of patients	365
Total cost of intervention	\$ 6,570.00
Savings (annual)	\$ 154,430.00

## Conclusion:

Though the facility did not see a significant change in their SSI odds ratio, the nasal decolonization program did achieve:

- Successfully implementation
- The total number of SSI's were reduced
- There was a potential financial savings associated with the intervention.

Though more study is needed, this implementation has shown a positive impact on patient care and is another step in reducing total patient harm.



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## References:

